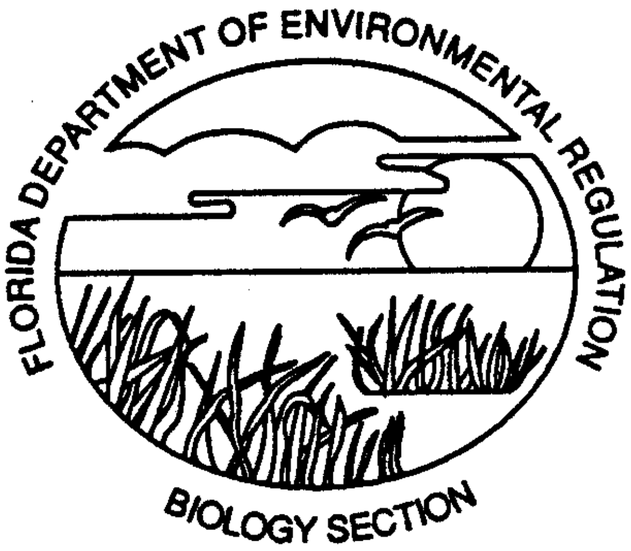


Bioassays of

Boca Chica NAS WWTP

Key West, Monroe County, Florida

NPDES #FL0020982

Sampled 5/6/91

June 17, 1991

Biology Section
Division of Administrative and Technical Services

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Boca Chica NAS WWTP

Key West, Monroe County, Florida

NPDES #FL0020982

Biology Section
Bureau of Laboratories
June 17, 1991

Introduction

Boca Chica NAS Wastewater Treatment Plant, US 1, Mile 7.7, Key West, Monroe County, Florida, NPDES #FL0020982, on 7 to 9 May, 1991.

This facility is located at the Boca Chica Naval Air Station in Key West. The design flow is 0.4 MGD with an average flow of 0.3 MGD. Effluent treatment consists of contact stabilization and chlorine disinfection. Dechlorination of effluent prior to discharge is required to begin by October 6, 1991. Discharge is to the Gulf of Mexico. The South District - Marathon office and the facility have discussed the option of tying into the Key West STP in 1992 for wastewater treatment.

The toxicity tests discussed in this report were performed in accordance with methods described by Peltier and Weber, 1985, *Methods for Measuring the Acute Toxicity of Effluents to Aquatic Organisms*, 3rd Edition, and by the FDER Biology Section, 1985, *Quality Assurance Manual for Performing Acute Toxicity Tests*, 2nd Edition.

Results and Discussion

A static acute screening bioassay was performed on a dechlorinated sample of effluent from this facility using the test organism, *Mysidopsis bahia*, the mysid shrimp. The sample was dechlorinated in the laboratory using sodium thiosulfate. A portion of chlorinated sample was also tested at the 100% concentration. The bioassay indicated that the sample from this facility was not toxic to *M. bahia*. Total residual chlorine levels detected in the sample in both the field and laboratory measurements were 1.0 mg/L and 0.2 mg/L, respectively. The salinity of the sample was 11 ppt. No further chemical analyses were performed on the sample.

Conclusion

The sample of effluent from this facility was not toxic on 6 May, 1991.

Table 1. Concentration Series and Volumes Used for the Boca Chica NAS WWTP Static Acute Screening Bioassay.

Mysidopsis bahia (mysid shrimp)

Concentration	Dilution Water	Sample	Total Volume
Control	500 mL	0 mL	500 mL
100%	0 mL	500 mL	500 mL

Table 2. Data recorded during the static acute screening bioassay of a sample of effluent from the Boca Chica NAS WWTP, Key West, Monroe County, Florida, NPDES# FL0020982, on 7 to 9 May, 1991.

Facility:	**Boca Chica NAS WWTP**		**NPDES #**	**FL0020982**	**Facility Type: WWTP**
Location:	US 1, mile 7.7, Boca Chica, Key West		Contact/District:	Gus Rios / Marathon	
County:	Monroe		Test type:	static acute screen	
Sample Collection Date:	**5/6/91**	Time: 1120	# tests:	1	Receiving Water: Gulf of Mexico
Test Beginning Date:	5/7/91	Time: 1330	Chlorination Type:	**Chlorinated**	
Test Ending Date:	5/9/91	Time: 1300	Dechlorination Method:	Sodium Thiosulfate (in lab)	**Page 1 of 1**

Total Residual Cl2	mg/L	Method
Field:	1.0	DPD3
Lab:	0.2	Hach
Lab:	0.4	Iodometric

Salinity (ppt)	
Control Water:	15
100% Sample:	11

Organism: ***Mysidopsis bahia*** Age: 2 to 3 days

LC50: - . Binomial: - Moving Average: - Probit: -

	SURVIVAL			Dissolved Oxygen			pH			Temperature			Conductivity	
Concentrations	# at 0 hr	Live at 24 hr	Live at 48 hr	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	24 hour	48 hour	0 hour	48 hour
Control	5	5	5	8.0	6.9	7.0	8.5	8.1	7.8	21.8	21.1	21.3	-	-
Control	5	5	5	8.0	6.9	7.0	8.5	8.1	7.8	-	-	-	25,100	25,500
chlorinated 100%	5	5	5	9.9	6.5	7.0	7.0	7.6	7.8	20.9	21.0	21.2	-	-
chlorinated 100%	5	5	5	9.9	6.5	7.0	7.0	7.6	7.8	-	-	-	18,300	18,800
* de-Cl2 100%	5	5	5	6.8	5.6	6.8	7.2	7.6	7.8	20.8	21.0	21.2	-	-
* de-Cl2 100%	5	5	5	6.9	5.8	6.8	7.2	7.6	7.8	-	-	-	18,200	18,800

* Dechlorination performed in laboratory using sodium thiosulfate.

DER Biology Section — Acute Bioassay Bench Sheet

Sample Source: NAS BOCA CHICA WWTP — Sample Collection: Date 5-6-91 Time 1120

Address/City: US 1, MILE 7.7, BOCA CHICA, KEY WEST — Test Beginning: Date 5-7-91 Time 1335

County: MONROE — Test Ending: Date 5-7-91 Time 1335

Contact/District: GUS RIOS / MARATHON — Test Organism: MYSIDOPSIS BAHIA

NPDES Permit #: FL0020982 — Outfall #: 001 — Dilution Water: 25.2‰

Test Number: 1 of 1 — Test Type: (Screening) | Definitive

(Static) | Static Renewal | Flow-through

Instrument Calibrations:

	pH	DO	Cond	Temp
0 hr	7@7.9@9	8.8@22	1396@24.5	22@24.7
24 hr	7@7.9@9	8.8@22	1390@24.6	22@24.5
48 hr	7@7.9@9	8.8@22°C	1393@24.2°	21.8@24.1

Remarks: SAMPLE ORIGINAL SALINITY ≅ 11 ppt
COND = 18,300 @ 24.2°C
CHLORINATED SAMPLE
ASW = 25,100 @ 24.7°C CONTROL SALINITY
≅ 15.2 ppt

Conc.	Chamber #	Number Live 0	24	48	DO (mg/l) 0	24	48	pH 0	24	48	Temp (°C) 0	24	48	Cond. (µmhos/cm) 0	24	48
CONTROL	67	5	5	5	8.0	6.9	7.6	8.5	8.1	7.8	21.8	21.1	21.3			
CONTROL	57	5	5	5	8.0	6.9	7.6	8.5	8.1	8.4				25,100	25,200	25,500
						KP 7.0				7.8						
w/ Cl⁻						KP 7.0										
100%	32	5	5	5	9.9	6.5	7.5	7.0	7.6	7.8	20.9	21.0	21.2			
100%	87	5	5	5	9.9	6.5	7.5	7.0	7.6	7.8				18,200	18,200	18,500
						KP 7.0										
DeCl⁻	~~7~~ KP	5														
100%	7	5	5	5	6.8	5.6	6.8	7.2	7.6	7.8	20.8	21.0	21.2			
100%	142	5	5	5	6.9	5.8	6.8	7.2	7.6	7.8				18,200	18,400	18,500
Measured/Loaded by:		MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
Recorded by:		MF	MF	MF	KP	KP	KP	KP	KP	KP	KP	KP	KP	KP	KP	KP

Investigators' Signatures

Kim Pearce

Marshall Faudelk

Reviewer

Water-quality Parameters

	Well Water	Cond. Water	Sample	Method	Measured by
Field Tot. Resid. Cl₂			1.0	DPD	KP
Lab Tot. Resid. Cl₂			0.4/0.0	[illegible]	MF
Alkalinity:					
Hardness:					
Total Ammonia:					

Chlorine Read 1.0 MF

Ammonia meter slope: _____